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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/324,253	06/02/1999	JERRY C. CHEN	0050.1610-000	1283

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EXAMINER
PAYNE, DAVID C

ART UNIT	PAPER NUMBER
2633	

DATE MAILED: 06/10/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/324,253	CHEN, JERRY C.	
	Examiner	Art Unit	
	David C. Payne	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 1999* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 June 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4 and 5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claim 1, 2, 9-11, 28, 31 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakajima et al. US 6054938 (Nakajima).

Regarding claim 1, Nakajima disclosed:

An optical frequency filter comprising:

a frequency dependent disperser that disperses an input optical signal to form a dispersed signal having a plurality of frequencies (FIG 1 #111);

a frequency selective modulator that modulates at least one of the plurality of frequencies (FIG 1 #116); and

a frequency dependent combiner that combines the frequencies in the dispersed signal to form an intensity modulated output signal (FIG 1 #117).

Regarding claim 2, Nakajima disclosed a varying function w.r.t. frequency over a selected bandwidth (c/l 10: 20-30).

Regarding claims 9 - 11, Nakajima disclosed a grating have a plurality of positions and angles that depend on frequency (FIG 3).

Regarding claim 28, Nakajima disclosed:

A method to convert FM signals to IM signals, comprising the steps of:

dispersing an input optical signal using a frequency dependent disperser to form a dispersed signal having a plurality of frequencies (FIG 1 #111);

modulating the optical signal using a frequency selective modulator that alters a magnitude of one of the plurality of frequencies (FIG 1 #116); and

combining the optical signal using a frequency dependent combiner to form an intensity modulated output signal that alters a magnitude of one of the plurality of frequencies (FIG 1 #117); and

combining the optical signal using a frequency dependent combiner to form an intensity modulated output signal (FIG 1 #117).

Regarding claims 31 and 34, Nakajima disclosed:

A method of filtering an optical signal comprising the steps of:

dispersing an input optical signal using a frequency dependent disperser to form a dispersed signal having a plurality of frequencies; (FIG 1 #111)

modulating the optical signal using a frequency selective modulator that modulates one of the plurality of frequencies; (FIG 1 #116) and

combining the optical signal using a frequency dependent combiner to form an output signal that varies with frequency over a selected bandwidth (FIG 1 #117).

3. Claims 1, 12, 27, 28, 31 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Nelson et al. US 3766392 (Nelson).

Regarding claim 1, Nelson disclosed:

An optical frequency filter comprising:

a frequency dependent disperser that disperses an input optical signal to form a dispersed signal having a plurality of frequencies (FIG 1 #21);

a frequency selective modulator that modulates at least one of the plurality of frequencies (FIG 1 #13); and

a frequency dependent combiner that combines the frequencies in the dispersed signal to form an intensity modulated output signal (FIG 1 #23).

Regarding claim 12, Nelson disclosed a prism (FIG 1 #21).

Regarding claims 27 and 28, Nelson disclosed:

an optical FM source (FIG 1 #15),

A method/means to convert FM signals to IM signals, comprising the steps of:

dispersing an input optical signal using a frequency dependent disperser to form a dispersed signal having a plurality of frequencies (FIG 1 #21);

modulating the optical signal using a frequency selective modulator that alters a magnitude of one of the plurality of frequencies (FIG 1 #13); and

combining the optical signal using a frequency dependent combiner to form an intensity modulated output signal that alters a magnitude of one of the plurality of frequencies (FIG 1 #23); and

combining the optical signal using a frequency dependent combiner to form an intensity modulated output signal (FIG 1 #23).

Regarding claims 31 and 34, Nelson disclosed:

A method of filtering an optical signal comprising the steps of:

dispersing an input optical signal using a frequency dependent disperser to form a dispersed signal having a plurality of frequencies; (FIG 1 #21)

modulating the optical signal using a frequency selective modulator that modulates one of the plurality of frequencies; (FIG 1 #13) and

combining the optical signal using a frequency dependent combiner to form an output signal that varies with frequency over a selected bandwidth (FIG 1 #23).

4. Claims 16 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Riza et al. US 5,329,118 (Riza).

Regarding claim 16, Riza disclosed:

A frequency modulation (FM) to intensity modulation (IM) converter comprising:

a frequency dependent disperser that disperses a frequency modulated light signal into a plurality of frequencies (FIG 1 #124);

a frequency selective modulator that modulates at least one of the plurality of frequencies (FIG 1 #140); and

a frequency dependent combiner that combines the dispersed and attenuated frequencies to form an intensity modulated output signal. (FIG 1 #192, abstract).

Regarding claim 20, Riza disclosed wherein a modulator is coupled to at least one of the disperser and combiner (FIG 1, #130, #120, #190).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2,3 rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. US 6054938 (Nakajima).

Regarding claims 2-5 and 7, Nakajima does not disclose that the light is transmitted in a monotonically or linear function. Nakajima does state that light is transmitted by modulating the light 1/8 period by 1/8 period (c/l: 6/5-20). It would have been obvious to one of ordinary skill in the art at the time of invention that the light with varies as taught my Nakajima is a linear monotonic function. The light transformation is a constant that fits the model as claimed.

7. Claims 6, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. US 6054938 (Nakajima) in view of Jalali et al. US 5,793,907 (Jalali).

Nakajima disclosed the aforementioned device but not a circulator, or AWG.

Jalali disclose a method and apparatus for a wavelength selective delay of an optically controlled device (c/l: 2/25-45). Specifically Jalali disclosed a circulator (c/l:2/5-25), and AWG (FIG 6). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Jalali and Nakajima to obtain the claimed invention. Circulators are well known in the art for coupling multiple ports in a directional manner to avoid back reflections and AWGs are well known as useful in the art for dispersing wavelengths in a regular fashion.

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. US 6054938 (Nakajima) in view of Harumoto et al. US 6021242 (Harumoto).
Nakajima disclosed the aforementioned device but not one including an exponential function grating device. Harumoto disclosed such a device (c/l: 4/45-50). It would have been obvious to one of ordinary skill in the art at the time of invention to use the Harumoto exponential grating in the Nakajima device to obtain the claimed invention. The exponential grating as a favorable transmission efficiency for separating only a specific wavelength from a wide wavelength region (c/l: 1/33-45).

9. Claim 15, 17-19, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riza et al. US 5,329,118 (Riza) in view of Nakajima et al. US 6054938 (Nakajima).
Regarding claims 15 and 17, Riza disclosed the aforementioned device but did not disclose that the light is transmitted in a linear function. Nakajima does state that light is transmitted by modulating the light 1/8 period by 1/8 period (c/l: 6/5-20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Nakajima and Riza to obtain the claimed invention. Linear operation is important to achieve a predictable consistent response of a given frequency range.

Regarding claims 18 and 19, the modified device of Riza/Nakajima teaches an input optical fiber (FIG 1) fiber grating (FIG 1) and grating (Nakajima FIG 3).

Regarding claims 32 and 33, the modified device of Riza/Nakajima disclosed collecting the input optical signal, forming a spectrum with the output signal (FIG 1), further comprising a parallel array of filters each having a disperser, attenuator and combiner (FIG 1 #110).

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riza et al. US 5,329,118 (Riza) in view of Jalali et al. US 5,793,907 (Jalali).

Riza disclosed the aforementioned device but not a circulator, or AWG.

Jalali disclose a method and apparatus for a wavelength selective delay of an optically controlled device (c/l: 2/25-45). Specifically Jalali disclosed a circulator (c/l:2/5-25), and AWG (FIG 6). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Jalali and Riza to obtain the claimed invention. Circulators are well known in the art for coupling multiple ports in a directional manner to avoid back reflections and AWGs are well known as useful in the art for dispersing wavelengths in a regular fashion.

11. Claims 21, 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riza et al. US 5,329,118 (Riza) in view of Dragon et al. US 6263127 (Dragone).

Riza disclosed the aforementioned device but not an array waveguide grating and mirror.

Dragone disclosed a device for filtering or increasing the number of wavelengths in an optical system (c/l: 1/15-20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Riza and Dragone to obtain the claimed invention. The Dragone invention is useful for filtering in systems with large number of wavelengths.

12. Claims 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riza et al. US 5,329,118 (Riza) and Dragon et al. US 6263127 (Dragone) and further in view of Nakajima et al. US 6054938 (Nakajima).

The modified invention of Riza and Dragon as disclosed fails to specifically teach a diffraction grating. Nakajima disclosed a diffraction grating for dispersion of the frequencies. The grating of Nakajima is effective to disperse various frequencies based on a varying function unlike the lenses of Riza.

13. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. US 3766392 (Nelson) in view of Nakajima et al. US 6054938 (Nakajima).

Nelson disclosed the aforementioned device but did not disclose that the light is transmitted

in a linear function. Nakajima does state that light is transmitted by modulating the light 1/8 period by 1/8 period (c/l: 6/5-20). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Nakajima and Nelson to obtain the claimed invention. Linear operation is important to achieve a predictable consistent response of a given frequency range.

Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (703) 306-0004. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

DCP
May 22, 2002

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